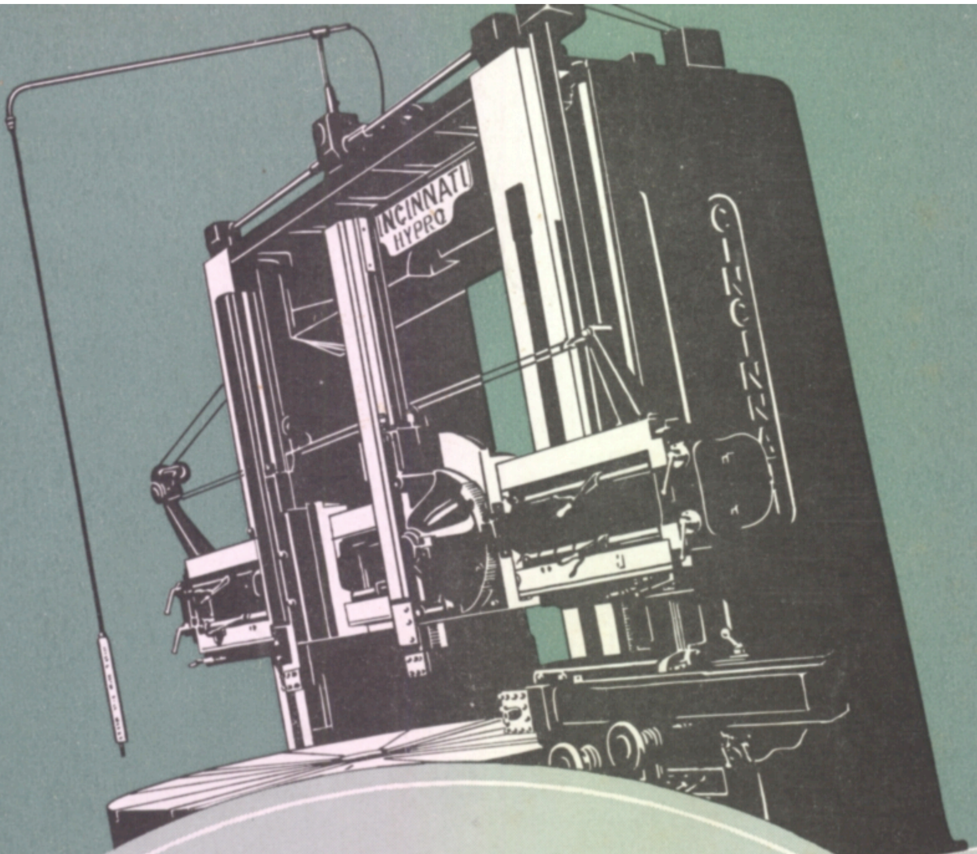


CINCINNATI Hypro
VERTICAL BORING AND TURNING MILLS

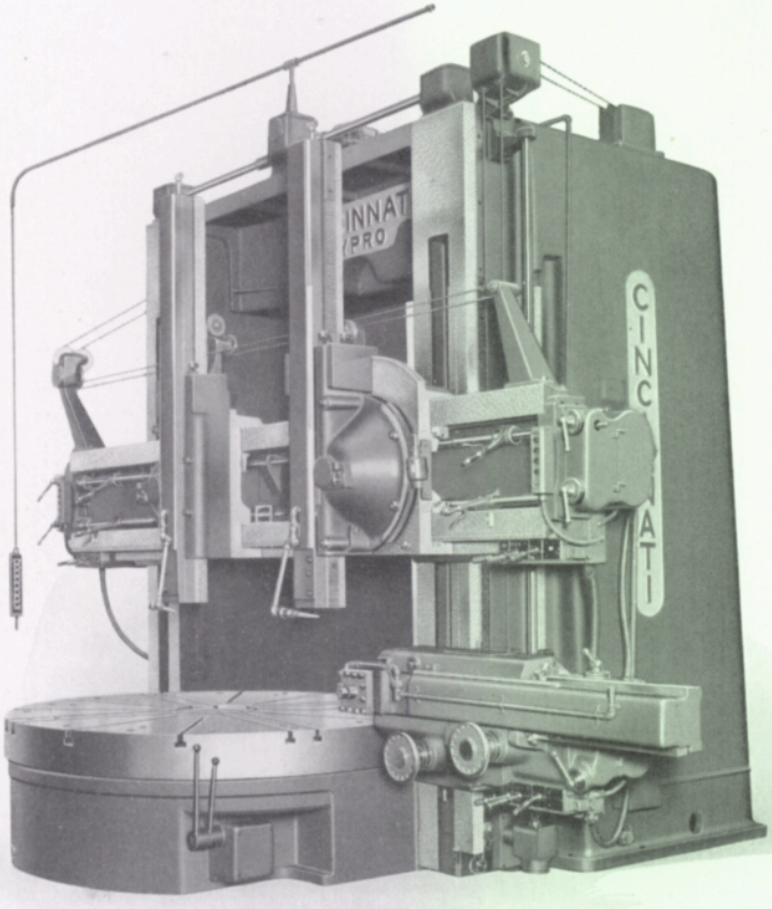
BULLETIN No. 175

Cincinnati Hypro Vertical Boring Mills

8′-10′-12′ AND 12′-16′ EXTENSION TYPE

CABLE ADDRESS "PLANER" CINCINNATI

The Cincinnati Planer Company
Cincinnati, Ohio, U. S. A.



CINCINNATI HYPRO 8′ VERTICAL BORING AND TURNING MILL

With Side Head

One piece Bed and Speed Box construction.

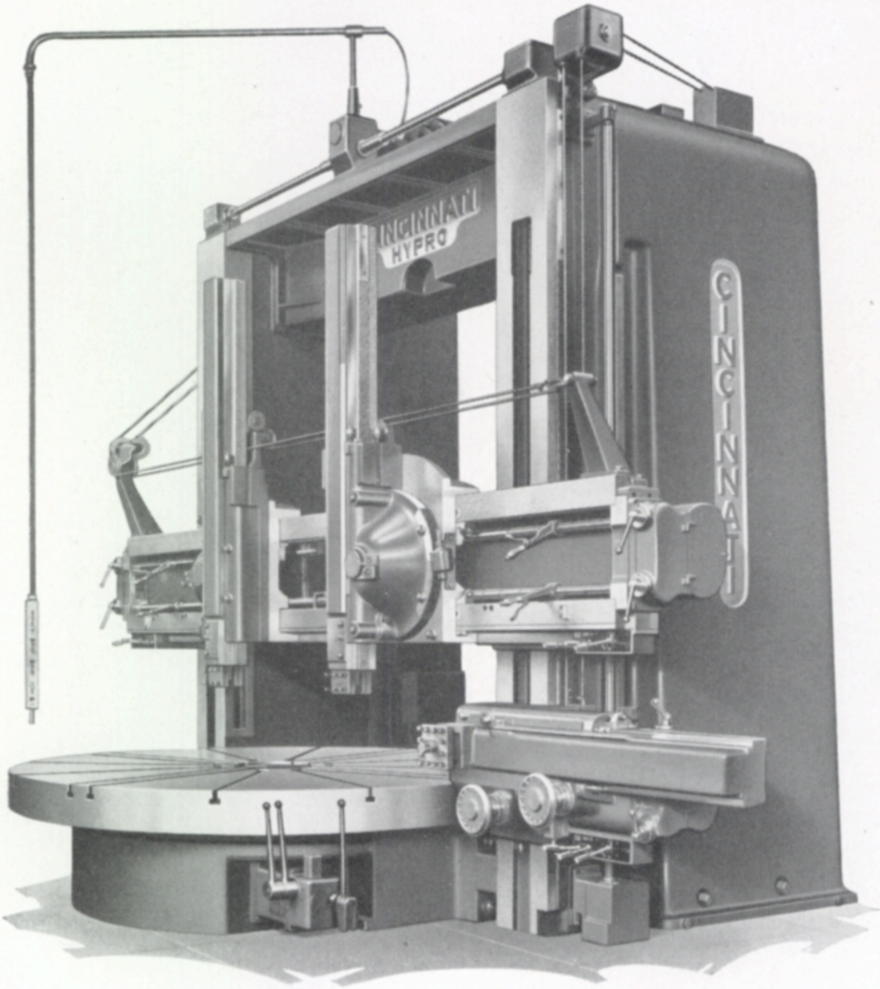
Two large diameter renewable Flat Tracks for supporting Table.

Anti-friction bearing mounted Table.

Large diameter spiral bevel steel Ring Gear for Table drive.

All Transmission Gears made of heat treated alloy steel forgings.

Anti-friction bearings provided for all Shafts.



CINCINNATI HYPRO 10′ VERTICAL BORING AND TURNING MILL

With Side Head

All Gears and Bearings including Table Tracks automatically oiled from electrically interlocked Motor Drive Pump and Filter Unit.

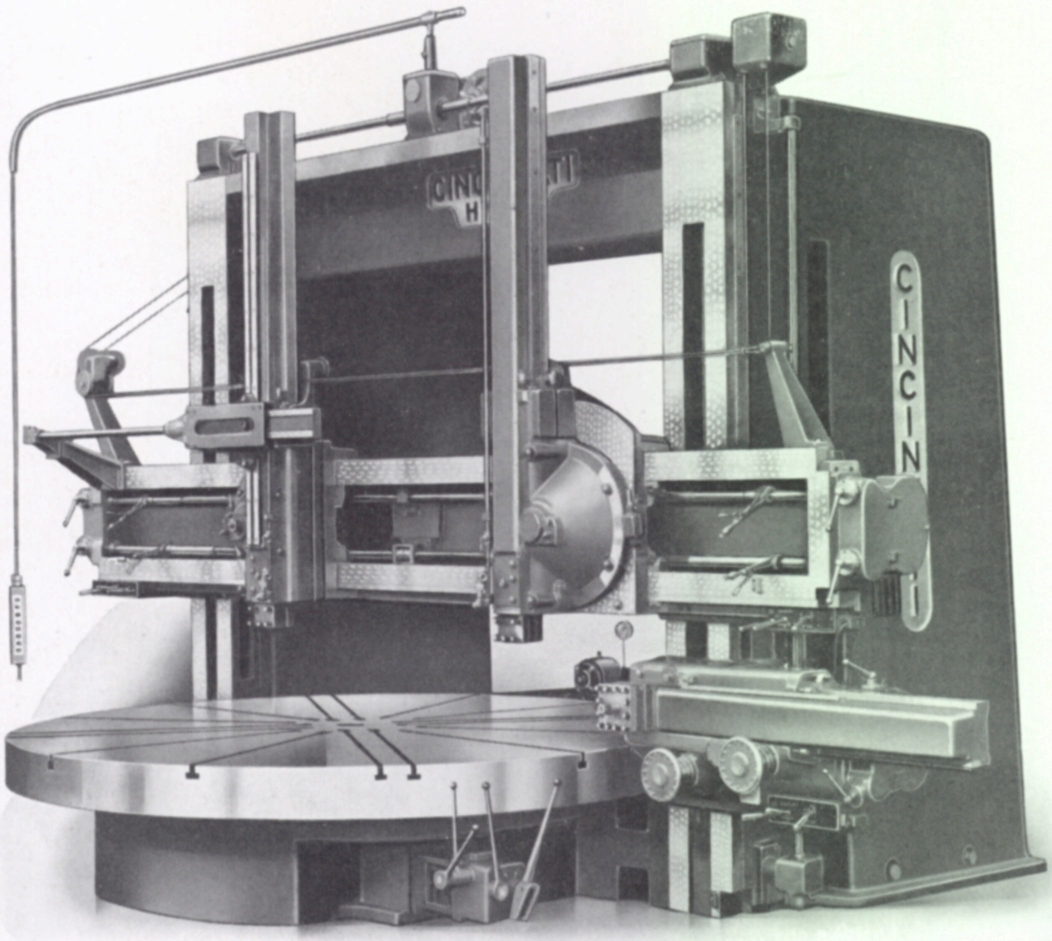
Pyramid type Massive Housings.

Enclosed counterbalance Weights.

Individual counterweights used for each Rail Head.

Complete individual Feed, Rapid Traverse, and Reversing Mechanism for each Head.

Micrometer collars furnished for all movements of Rail Heads. Scales are furnished on Cross Rail and all Rams.



CINCINNATI HYPRO 12′ VERTICAL BORING AND TURNING MILL

Equipped with Right Hand Side Head

Photograph Shows Taper Attachment on Left Hand Rail Head (Special)

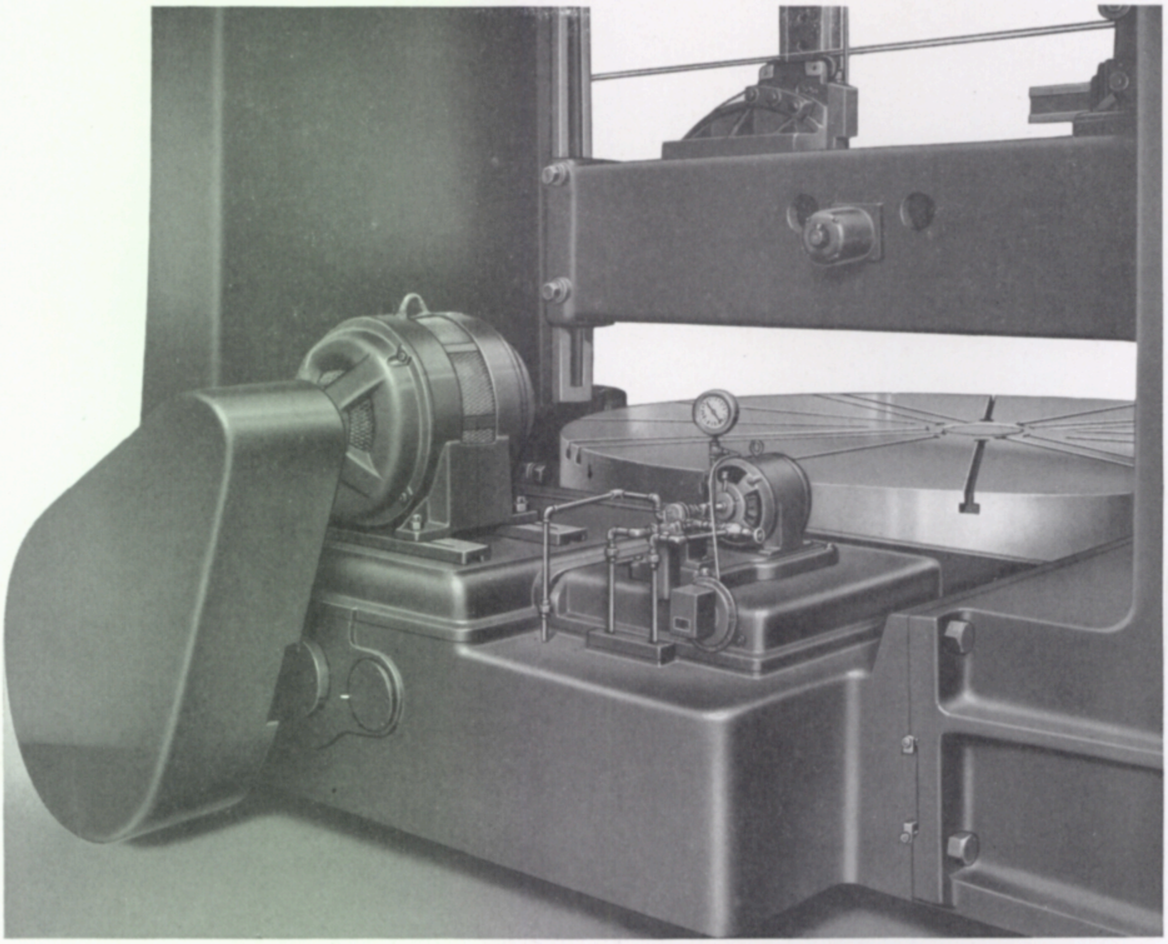
Long, narrow and solid guide bearing at bottom of Rail prevents tilting and binding of Heads.

Instantaneous Rail Lift Mechanism positively interlocked with powerful electric or mechanical Rail Clamp.

Rail Heads square locked throughout with Taper Gibs.

Cross and Down Feeds provided with ratchet handles for fine adjustments.

Complete arrangement of Safety Features for protection of operator and machine.



REAR VIEW OF 8′-10′ AND 12′ MILLS

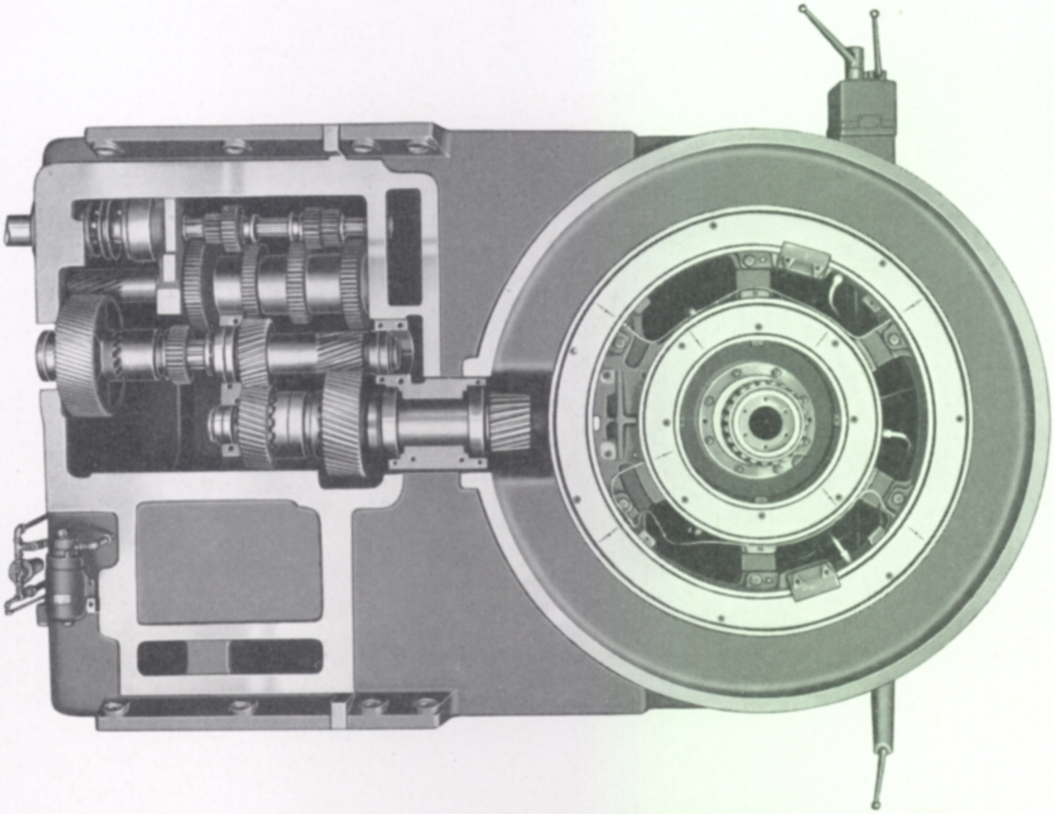
This shows Vee belt drive from main drive motor to speed box. One piece Bed and Speed Box construction eliminates all twisting and mis-alignment tendencies which results in a smoother finish on all classes of work.

Gears, Bearings and Table Tracks are automatically oiled from motor driven, electrically interlocked, pump and filter unit.

The Rail is clamped to the Housing by a Torque Motor in center of Rail and lowered or elevated through an instantaneous Rail Lift Mechanism, which is positively interlocked with clamping mechanism. An automatic stop is provided for maximum height of the Rail.

Push-Button control clamps the Rail firmly against the heaviest cutting and at same time operates interlocking device, so that it is impossible to raise or lower the Rail when clamped. This feature protects the accuracy of the Elevating Screws. This is standard on 10′ and 12′ Mills.

Standard equipment on 8′ Mill includes Single Turn Manual Rail Clamp with same interlocking features. Electric Rail Clamp can be furnished as an extra.



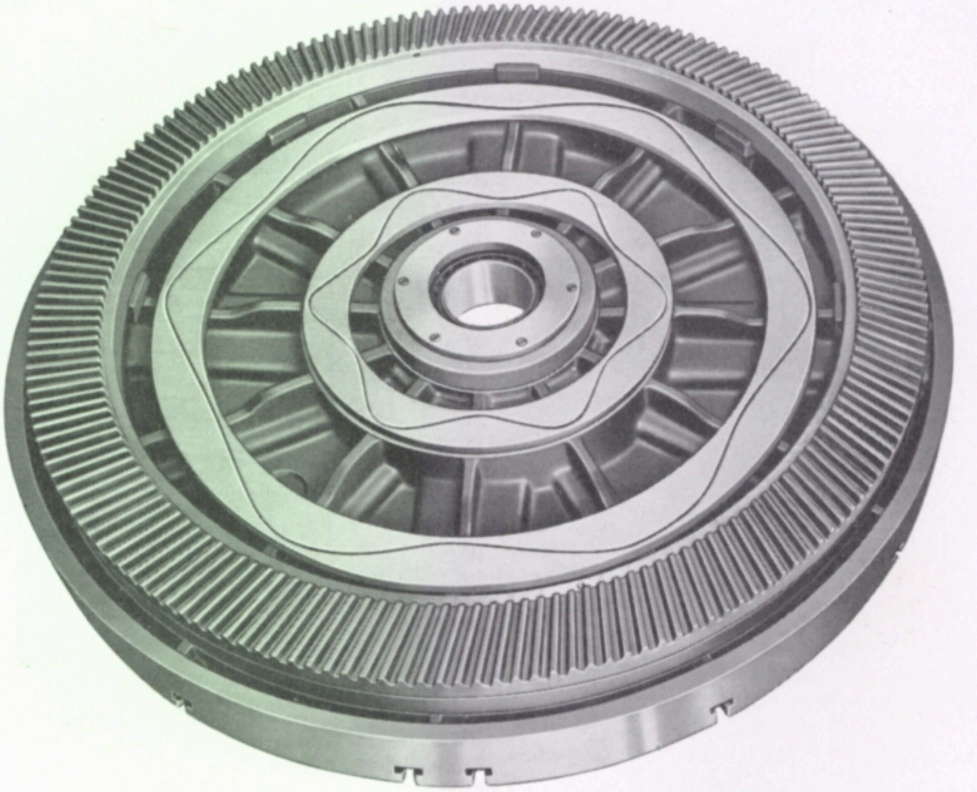
Complete Anti-friction Bearing Transmission and Table Mounting, Dual Track, Automatic Oiling System and Hold Down Gibs

MAIN DRIVE AND BED CONSTRUCTION

The transmission is contained in the one-piece bed and is of such proportions as are required for transmitting power when heavy cuts are taken. All gears are of heat treated alloy Steel forgings. The Pinions are of hardened alloy steel. Heat treated alloy steel Sliding Spur Gears on Multiple Splined Shafts are used for the first changes, double anti-friction bearing mounted helical gears are used for final drive. Main Drive Shaft equipped with three sets of double row bearings.

Bed is constructed with double walls reinforced with heavy ribs. The bearings for the Table are nearly under the normal position of the load. These renewable flat tracks are securely bolted and dowelled to the Bed.

These features insure a perfectly smooth cut on all classes of work at the full capacity of the machine.



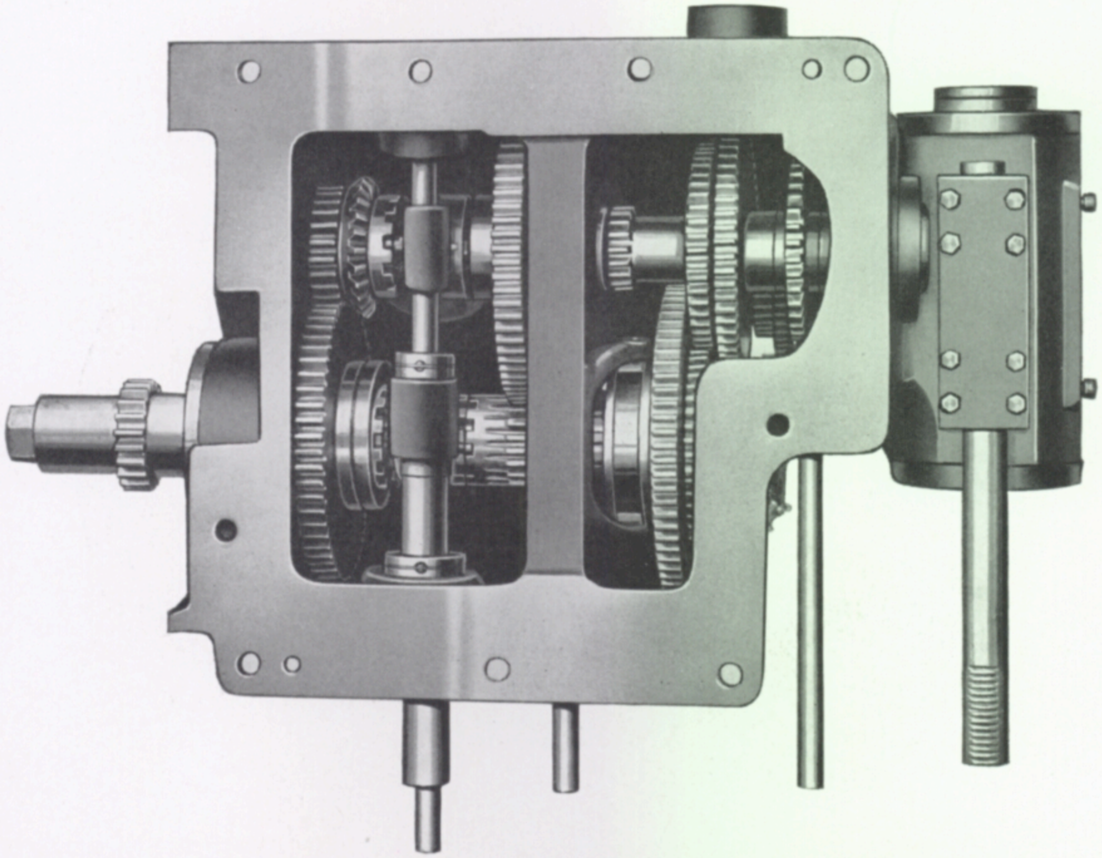
Bottom View of Extra Heavy Hypro Boring Mill Table

TABLE AND DRIVE

View of under side of Hypro Boring Mill Table showing Dual Track Anti-friction Bearing mounting, wide face steel flame hardened Table Gear and also the extra heavy ribbing of this member.

Ring Gear is nearly full diameter of Table, thus giving increased power and leverage when machining large diameter work. Flame hardened tooth Table Gear plus the alloy steel heat-treated bevel Pinion of special designed spiral teeth insures true tooth contact at all times.

Table is provided with parallel and radial tee-slots. Dimensions of parallel tee-slots comply with standard specifications of face plate Chuck Jaws.



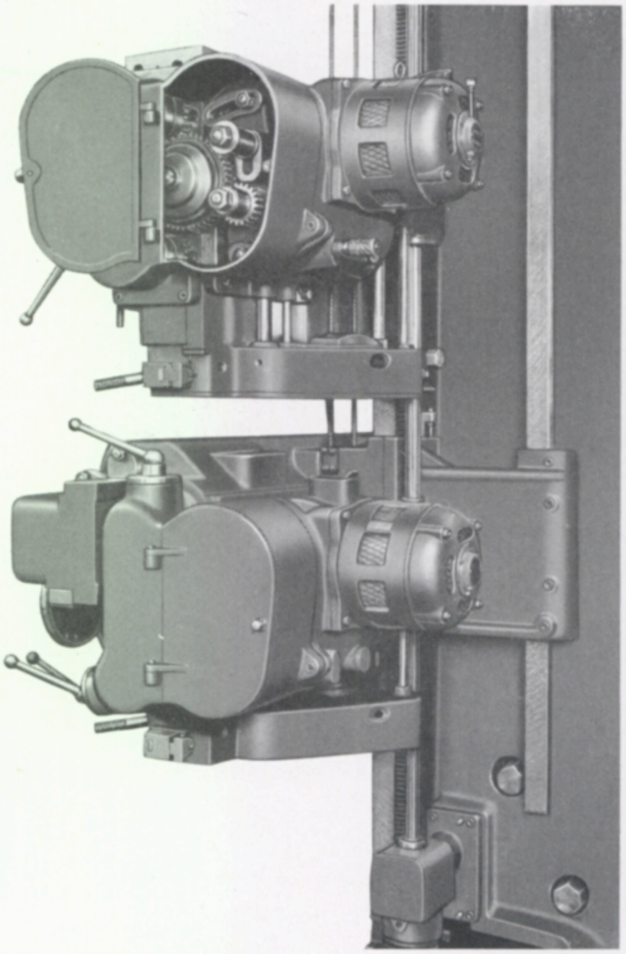
Complete Individual Feed, Rapid Traverse and Reversing Mechanism Provided for Each Head

FEED AND RAPID TRAVERSE

The Feed Boxes are of the latest construction. All gears are of chrome nickel steel and heat treated. They are mounted on multiple splined integral shafts and mounted in anti-friction Bearings. The complete feed unit is enclosed and runs in a bath of oil supplied by a pump built inside of each feed box. Twelve (12) mechanical changes of feeds are provided. Finer feeds than standard are furnished at an extra charge.

All levers for feed, traverse and reversing are placed in front of the machine convenient to the operator and at no time is it necessary for the operator to shift any mechanism behind the Rail.

Rapid Traverse is independent for each Head including the Side Head. There is an interlocking device used so that the traverse and feed cannot be engaged at the same time. Individual 3 H. P. Rapid Traverse Motors are used for each Head.



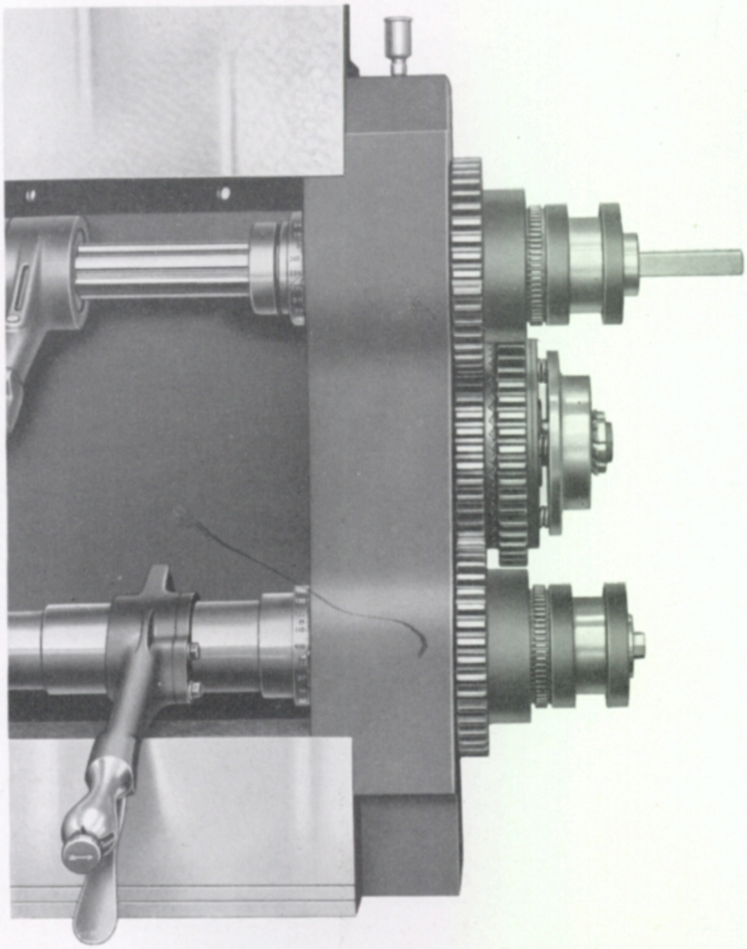
Rear View of Right Hand End of Rail and Rear View of Side Head

THREADING AND DRUM SCORING

Photo shows individual Feed, Rapid Traverse and Reversing Mechanism for each Head and also separate Rapid Traverse Motors.

Note open end of Rail showing Quadrant and Gears for thread cutting attachment.

Thread Cutting and Drum Scoring attachment can be furnished for any Head as an extra. Changes from one pitch to the other can be easily and quickly made without disturbing Rail Screws. There is no difficulty in catching the thread as a single tooth clutch is furnished in the Feed Box.



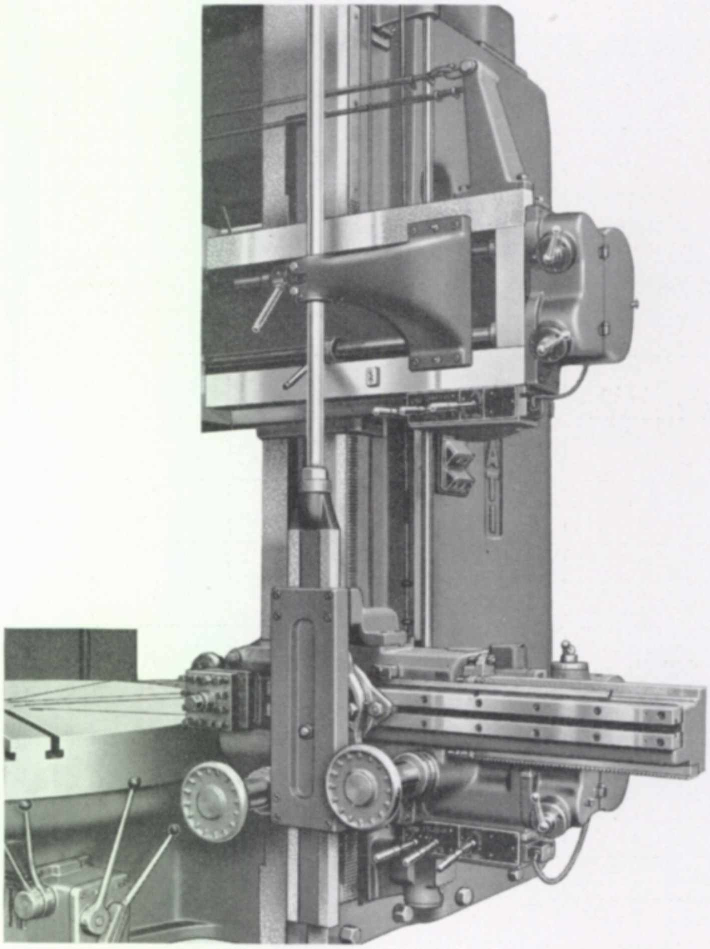
View of End of Rail with Cover Removed

CROSS RAIL

The Cross Rail is of box form and a deep Arch is provided on the back so any deflection due to the weight of the Heads or pressure of the cut is reduced to a minimum. A long narrow guide bearing at the bottom of the Rail insures a perfect alignment and prevents tilting and binding of the Heads when taking heavy cuts. The narrow guide section of the Rail is solid and is an improvement over the cored out (old style) thin section generally used.

Cross and down feeds are provided with ratchet handles for fine adjustments. They can be easily positioned to suit the operator's convenience.

This photograph shows Safety Feed and Rapid Traverse Clutch on end of Rail. This Safety Clutch is designed to protect the machine when overloaded due to excess feed or running the Heads together, or into the work.



Front View of Side Head with Taper Attachment

TAPER ATTACHMENT

Taper attachment can be furnished on Side Head or either Rail Head and will turn tapers from approximately 1° to 20°.

SIDE HEAD

The Side Head is furnished on the Right Hand Housing and is of the non-swiveling type. It is provided with a twelve position square turret tool holder, made from a solid steel forging and heat treated.

It is fitted directly to a bearing which is integral with the Housings to give a narrow guide for easy movement. Through a unique design of support the Side Head Saddle on the outside of the Housing permits distribution of all stresses from heavy cuts over the entire Housing. (See cut on page 12.) The gibs are so arranged to divide strains over the entire Housing, doing away with the intervention of separate parts.

ELECTRICAL EQUIPMENT: 8′, 10′ and 12′ Boring Mills 12′-16′ Extension Boring Mill

MOTOR AND CONTROL REQUIREMENTS	A-C SUPPLY ONLY				A-C AND D-C SUPPLY				D-C SUPPLY ONLY			
	220 or 440 or 550 Volts 3 Phase-60 Cycles				Main Mtr: 230 Volts D-C Aux. Mtrs: 220 or 440 or 550 Volts 3 Phase 60 Cycles				230 Volts D-C			
	8′, 10′ or 12′		12′-16′		8′, 10′ or 12′		12′-16′		8′, 10′ or 12′		12′-16′	
	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM
Main Drive Motor (One)	40	900	40	250* 1500	40	500 1000	40	250 1500	40	500 1000	40	250 1500
Variable Voltage Motor Generator Set (One)	–	–	×	×	–	–	–	–	–	–	–	–
Rail Elevating Motor, Hoist Type, Squirrel Cage (One)	10+	1800	10+	1800	10+	1800	10+	1800	10+	1800	10+	1800
Head Traverse Motors, Hoist Type, Squirrel Cage, Round Frame, Nema-B Flange Mounting (One per Head)	3	1800	3	1800	3	1800	3	1800	3	1800	3	1800
Housing Traverse Motor, Hoist Type, Squirrel Cage (One per Head)	–	–	5	1200	–	–	5	1200	–	–	5	1200
Combination Controller (One) Including Control for Above Motors; Also Control For:	×		×		×		×		×		×	
Rail Clamp Motor (One)	× (Special on 8′ Mill)		×		× (Special on 8′ Mill)		×		× (Special on 8′ Mill)		×	
Coolant Pump Motor (One)	If Used		If Used		If Used		If Used		If Used		If Used	
Main Motor Rheostat (One Manually Controlled	–		–		×		–		×		–	
Remotely Controlled			×				×				×	
Pendant Station, 11-Button	One		Two		One		Two		One		Two	
Rail End Stations, 5-Button	Two		Two		Two		Two		Two		Two	
Side Head Station (Where Used), 2-Button	One		One		One		One		One		One	
Coolant Station (Where Used), 2-Button	One		One		One		One		One		One	
Oil Pressure Switch (One)	×		×		×		×		×		×	

(*) D-C Motor used in conjunction with Variable Voltage Motor Generator Set.

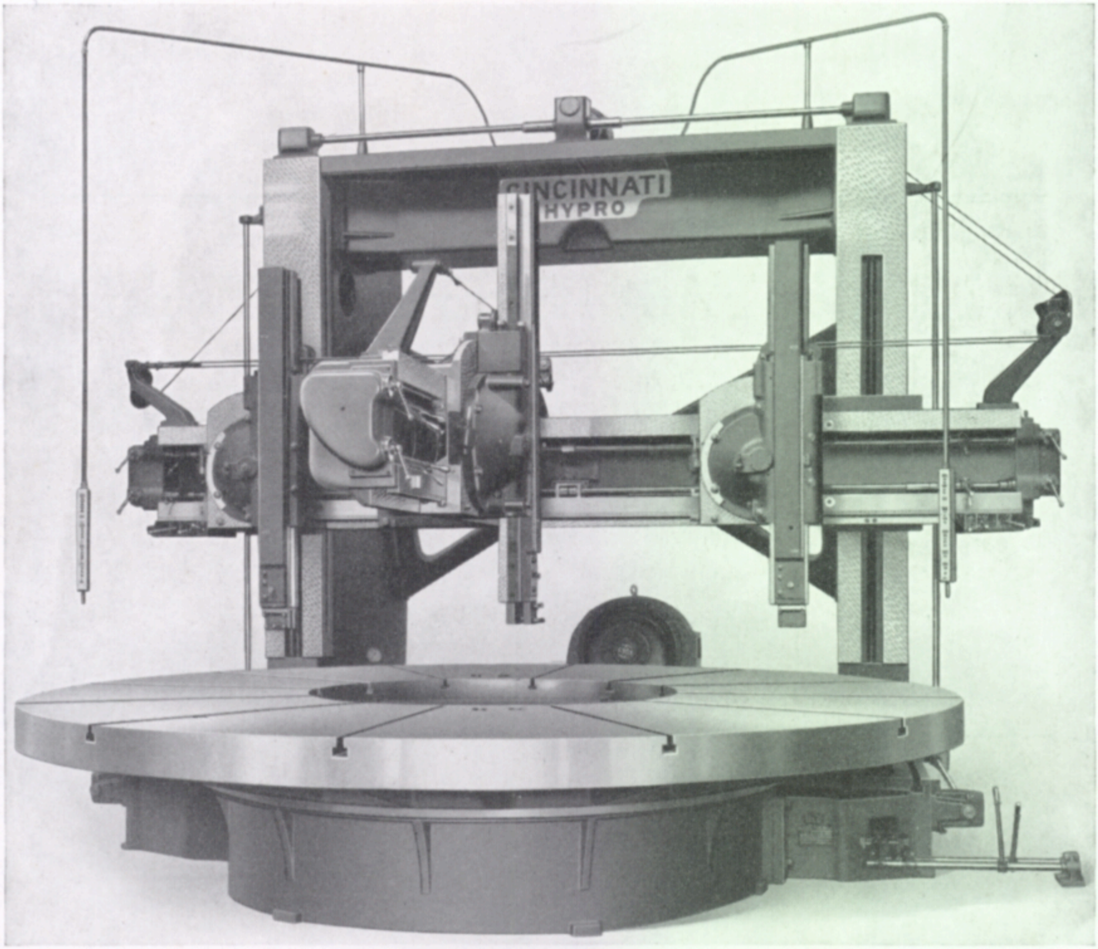
(+) 7½ HP Motor used on 8′ Mill.

(×) Indicates Item Required.

(–) Indicates Item not Required.

Prices for Electrical Equipment must be secured from The Cincinnati Planer Company.

12-16-Foot Extension Type Cincinnati Hypro Vertical Boring and Turning Mills



Front View Showing 12'-16' Hypro Extension Mill
This Photo Shows 16' Auxiliary Table Mounted On Standard 10' Table

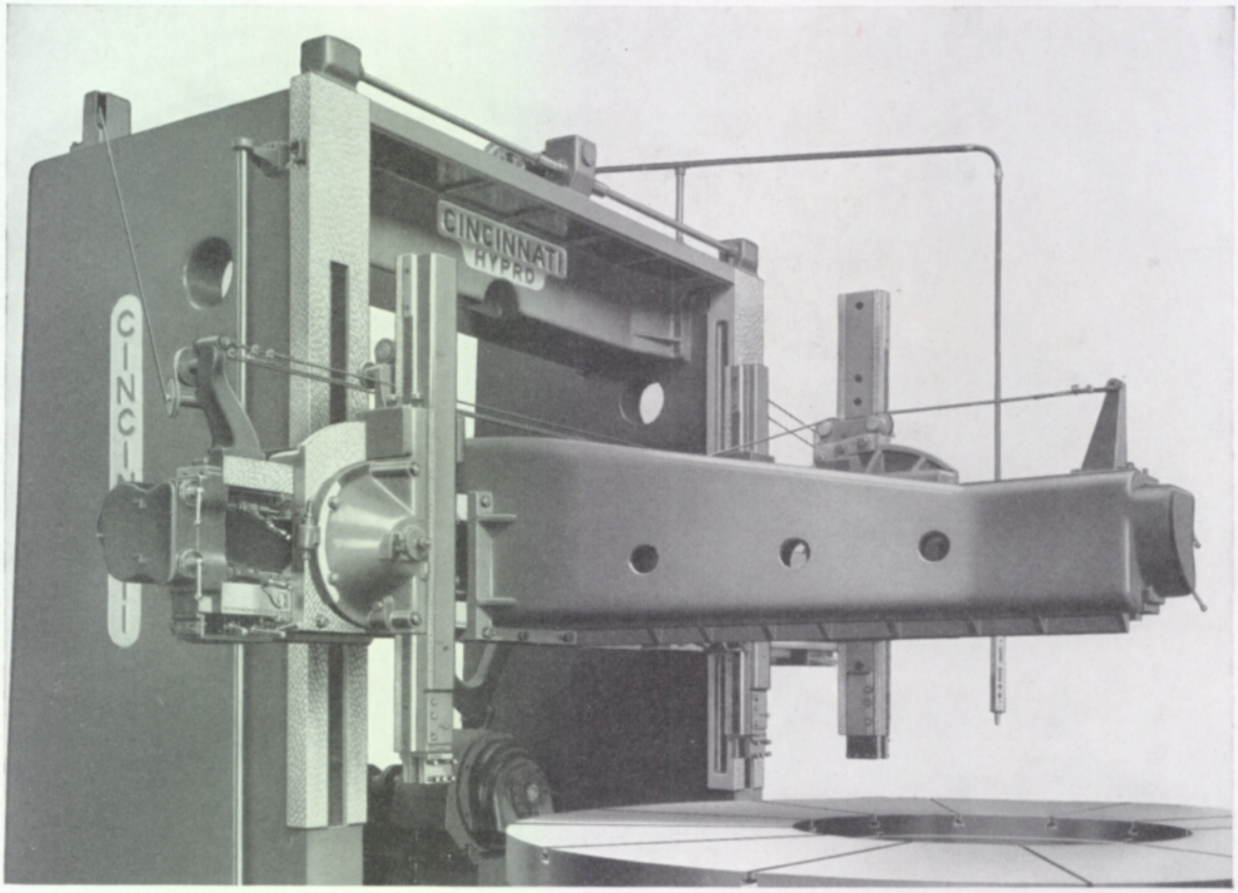
MAIN DRIVE

Due to the one-piece Bed and Speed Box construction, all twisting tendencies and misalignments are eliminated, which results in a smoother finish on all classes of work.

The complete transmission is contained in the one-piece Bed and is of ample proportions for transmitting power when heavy cuts are taken. All Gears are of heat treated alloy steel forgings. No steel castings are used. The Pinions are of hardened steel. Heat treated alloy steel shaved and lapped spur gears on multiple splined shafts are used for the first drive. Double Timken mounted helical gears are used for the final drive.

Timken bearings are used through the heavier loaded shafts each having three double row bearings close to the gear load.

The Transmission is enclosed in an oil tight case and operates in a bath of oil. To assure ample lubrication at slow speeds filtered oil is pumped to bearings and sprayed on the gear train.



View Showing Left Hand End of Rail and Rear of Reach on 12'-16' Extension Mill

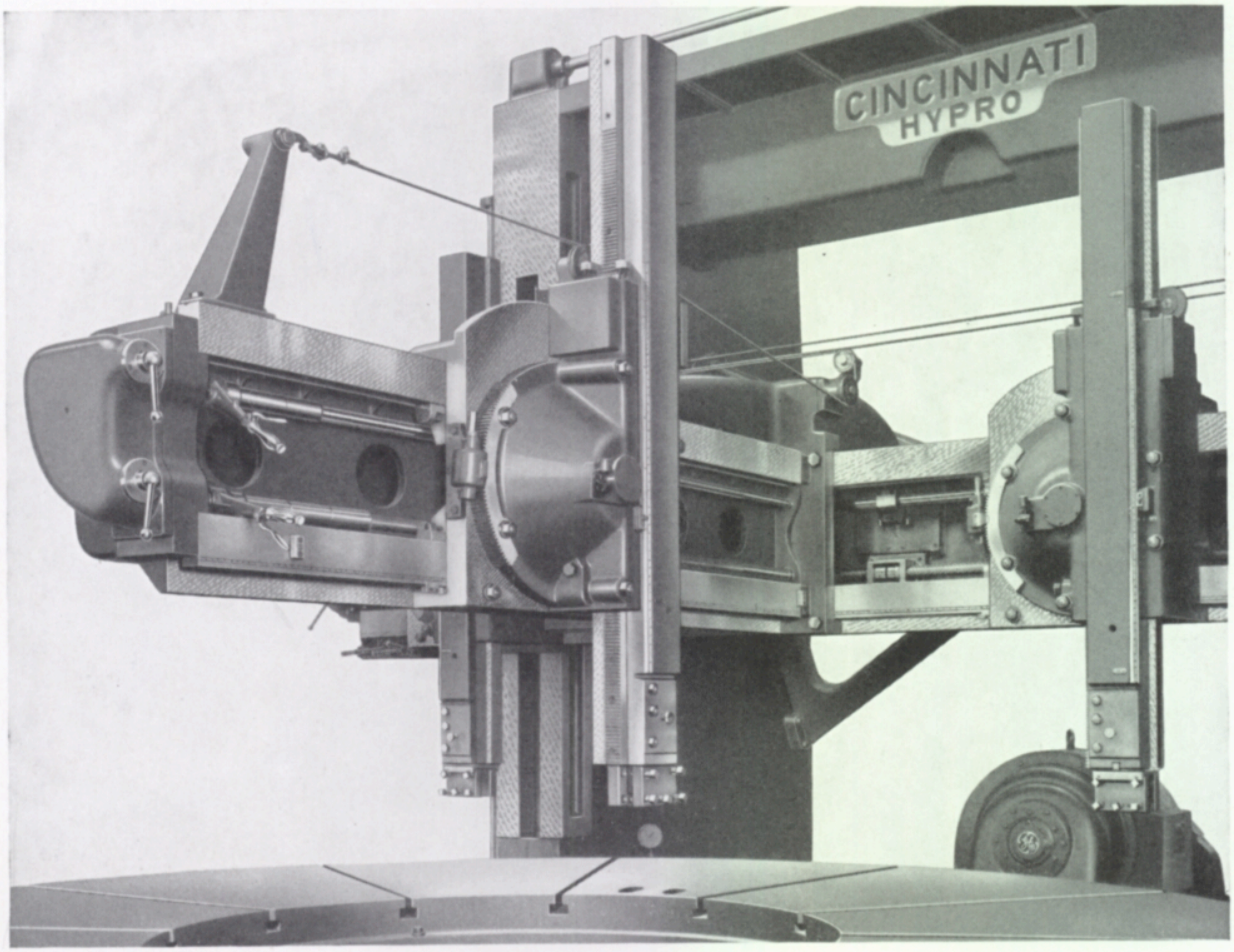
TABLE AND DRIVE

The Table is of extra depth, rigidly constructed and reinforced by heavy radial ribs and is provided with parallel and radial tee slots. Dimensions of the parallel tee slots comply with standard specifications of face plate jaws.

It is driven by a steel spiral bevel gear with flame hardened teeth, and is nearly full diameter of the Table, thus giving increased power and leverage when machining large diameter work. The spiral bevel pinion has double Timken Bearings on both sides, eliminating strain on the pinion shaft.

LUBRICATION

The Table Track and Spiral Bevel Gear are lubricated by filtered oil circulated from the transmission oil reservoir. Circulation is provided by a motor driven pump through a pressure switch to the Table Drive Motor so that operation of the Table is impossible without an ample supply of oil to the track bearing and gears.



Front View of Reach and Right Hand Rail Head on 12′-16′ Extension Mill

FEED AND TRAVERSE

An independent feed and traverse box for each Head, located at the end of the Rail, provides feeds and Rigid traverse in all directions.

Heat treated, alloy steel gears mounted on multiple splined shafts revolve on Timken Bearings in a bath of oil. A pump is also provided to assure ample lubrication at slow feeds.

All feed levers are brought to the front of the Rail within easy reach of the operators position. At no time is it necessary to move levers at the end of or in back of the Rail.

Traverse is provided by a 3 H. P. flange mounted Motor, safety interlocked with the feed shaft.

Power Feed and traverse to the Head and Ram on the Extension Rail is provided.

PROVISION FOR SAFETY

Overload Clutches are provided in the Head mechanism so that the Heads or Rams may be traversed or fed together or against the limit stops without damage to the mechanism.

Safety limit switches automatically limit the elevation of the Rail and the travel of the Housings.

SCALES

Scales are furnished on the Cross Rail and all the Rams. The Ram Scales are provided with an adjustable locator. Micrometer collars are furnished at the end of the Rail controlling the horizontal and vertical movement of the Rail Heads.

HOUSINGS

Massive Housings with their broad face and unusually long base insure rigidity under most severe duty. The Housings are of the square type and provide a sheathe for the Rail Head counterbalance weights, adding not only to the rigidity of the machine but safety as well. Individual counterweights are used for each Rail Head, therefore the movement of the Ram is not affected by heavy special tooling. The Housings are tied together at the top by a well ribbed reinforced box section arch and are cross braced at the rear to provide additional rigidity.

The Housing Bases are tongued and bolted to the Bed and the Housings move back on this base. Each Housing is clamped to its base by eight 1½″ diameter bolts. Movement is secured through precision screws and bronze nuts of ample diameter to maintain perfect alignment.

The Power is supplied through an independent Motor controlled through a push-button on the Housing.

CROSS RAIL

The Cross Rail is of box form and a deep Arch is provided on the back so any deflection due to the weight of the Heads or pressure of the cut is reduced to a minimum. A long narrow guide bearing at the bottom of the Rail insures a perfect alignment and prevents tilting and binding of the Heads when taking heavy cuts. The narrow guide section of the Rail is solid and is an improvement over the cored out (old style) thin section generally used.

The Cross Rail is furnished with an extension Rail fitted with an auxiliary swiveling Head. The arm is of sufficient length to bore when Housings are moved back.

Clamping of the Rail to the Housings is accomplished through a self-equalizing lever arrangement powered by a Torque Motor mounted on the back of the Rail.

The clamping and elevating Motors are electrically interlocked through limit switches so that it is impossible to move the Rail when it is clamped.

The Rail is elevated and lowered by large diameter precision screws and oversize bronze nuts. The screws are driven by an independent Motor through a worm reduction box on top of the Arch.

Push-Button control in the pendant station is provided for elevating and clamping.

RAIL HEADS

The Rail Heads are amply proportioned to meet the requirements of a heavy duty mill. They have square guides with tapered gibs throughout.

The swivels have full bearing on the saddles and are clamped by seven bolts. A range of 45° each side of center is provided with operation by worm and segment.

Sliding, safety ratched handles provide micrometer adjustment whether the operator is on the Table or floor.

TOOL BARS

The Rams are of box section made from special iron and have an exceptionally long bearing. The down feed rack is of steel, and the pinion is solid with the shaft, and made of chrome nickel steel and hardened.

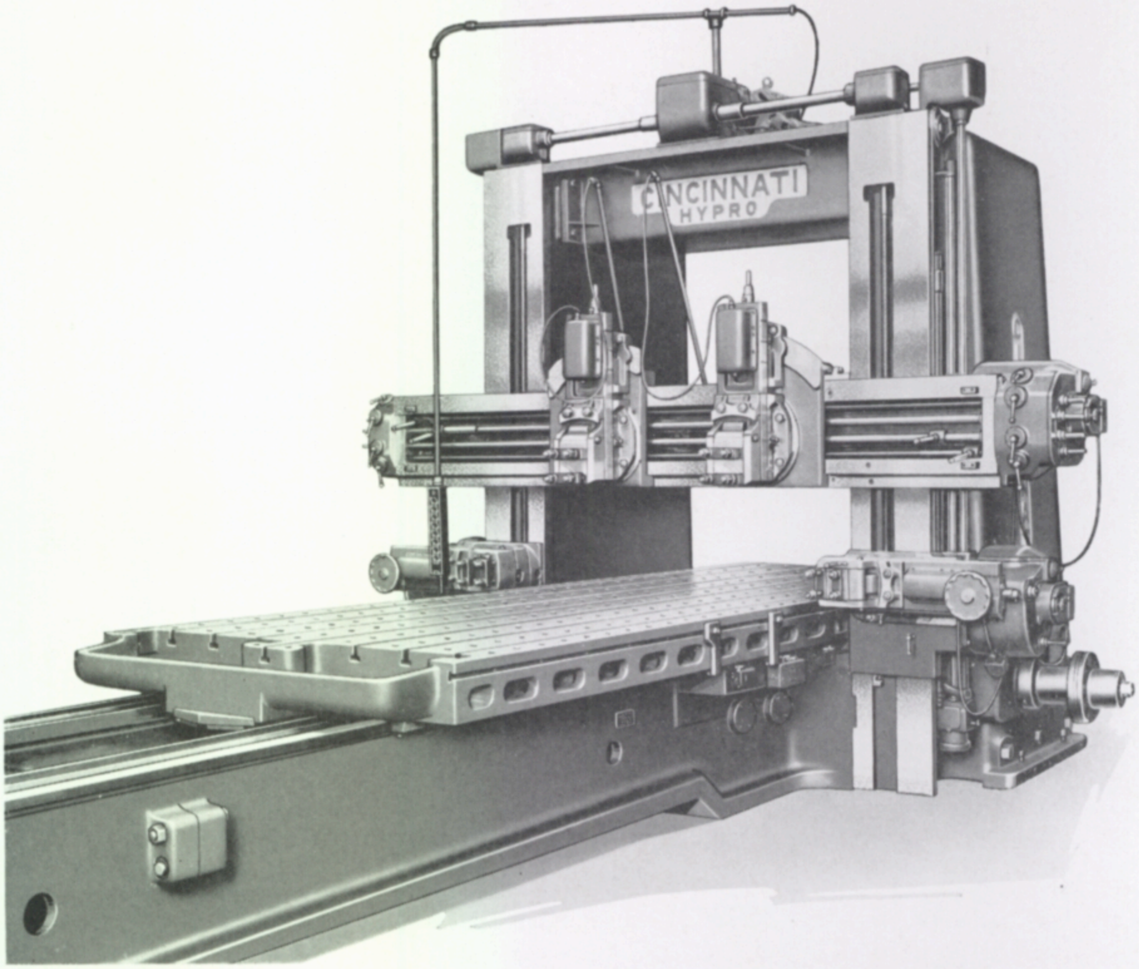
They are equipped with Tool Holders made from solid steel forgings and heat treated. The Tool Holder is clamped by three binder bushings of special design and is further provided with a heavy key to resist torsional strains.

TABLE DRIVE

The Table is driven by a D. C. Motor of wide speed range so that only one gear change is needed to provide the full range of Table speeds. With this arrangement and the motor driven rheostat provided, a constant surface speed can be maintained on facing cuts without marking the work by gear changes. The Table is started, stopped, and inched by push buttons in the pendant switch. Dynamic braking eliminates coasting when stopping the Table. Half of the total speed range is available by push button selection in the pendant switch.

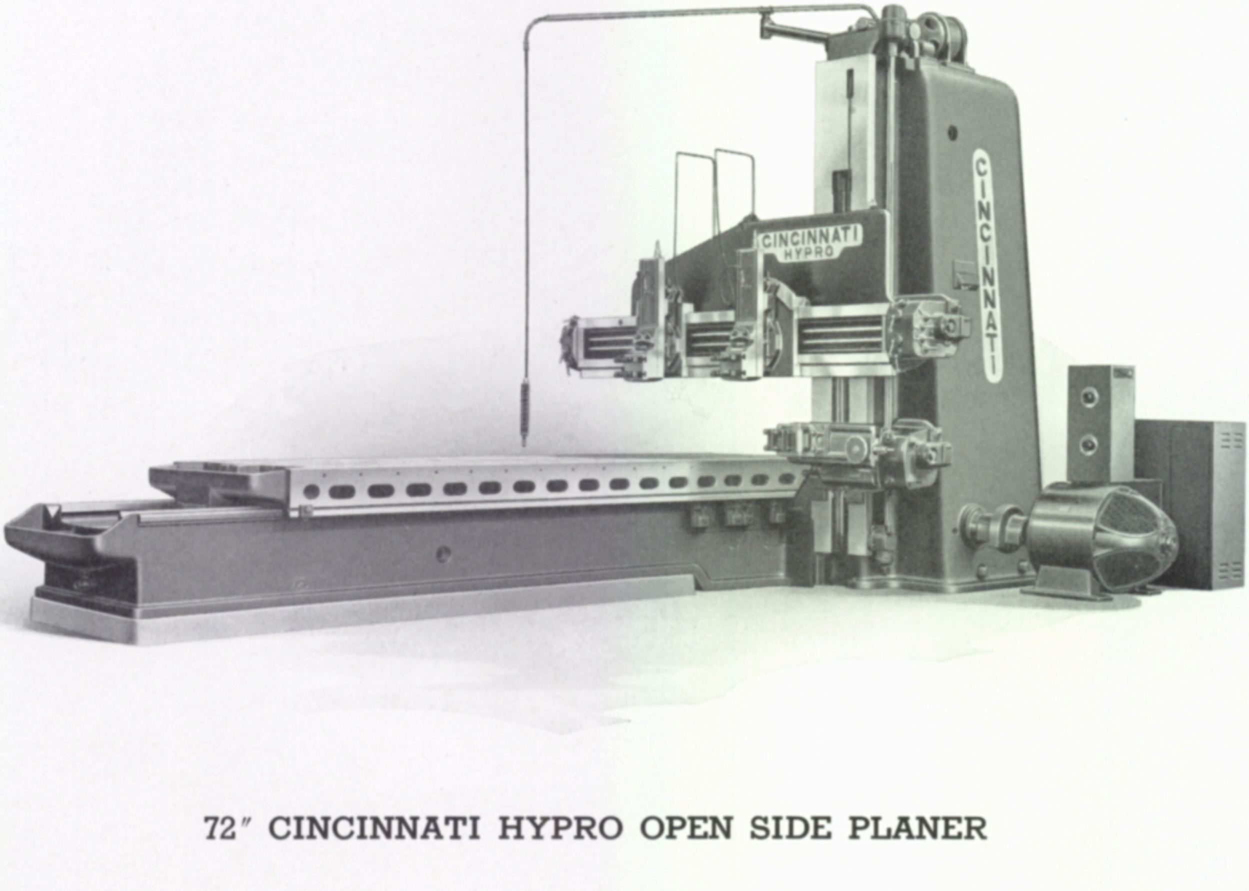
When D. C. current is not available a variable voltage generator set is provided and almost the full speed range of table speeds is available by push button selection. (See page 14 for specifications of Electrical Equipment.)

We Manufacture a Full Line of Double Housing Planers from 24-inch to 120-inch Width



72″ CINCINNATI HYPRO DOUBLE HOUSING PLANER

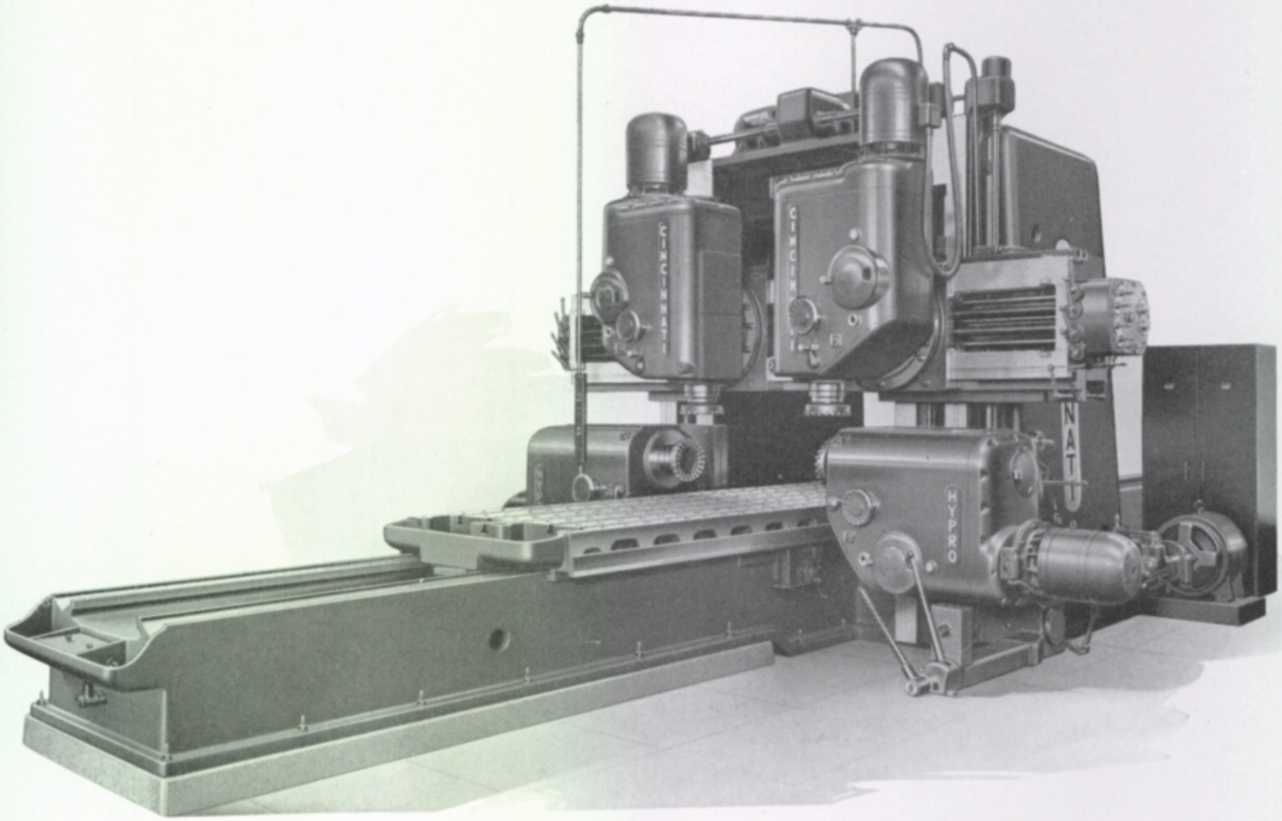
We Manufacture a Full Line of Open Side Planers from 30-inch to 120-inch Width



72″ CINCINNATI HYPRO OPEN SIDE PLANER

Cincinnati Hypro Planer Type Milling Machines

Sizes 30″ to 120″ with 7½″ or 9½″ Diameter Milling Head Quills

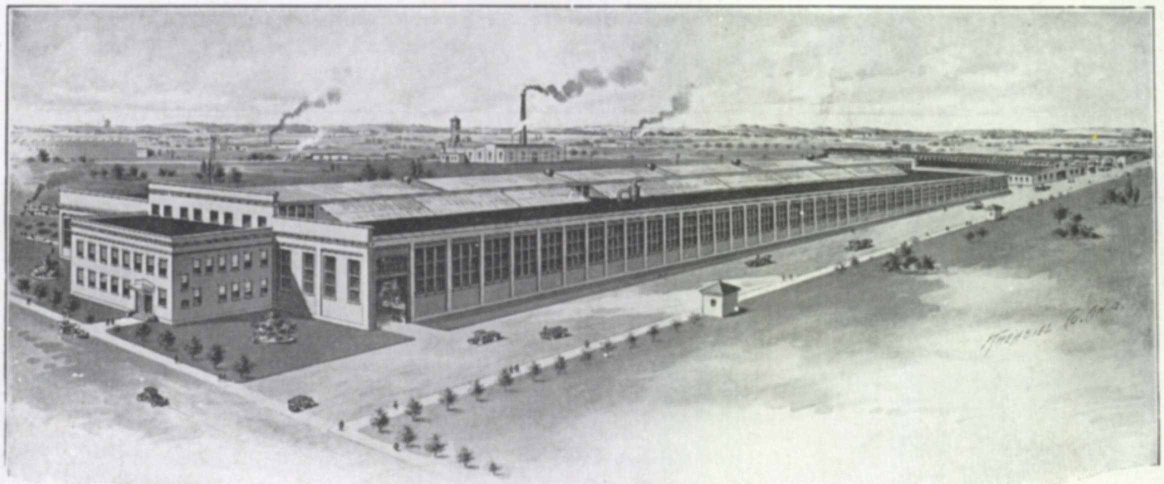


60″ x 48″ x 14′ Cincinnati Hypro Planer Type Miller—9½″ Quill

We Also Manufacture the Combination Type

Planer and Milling Machine

Our Shop At Cincinnati Where Visitors Are Always Welcome



The Cincinnati Planer Company

CINCINNATI, OHIO, U. S. A.